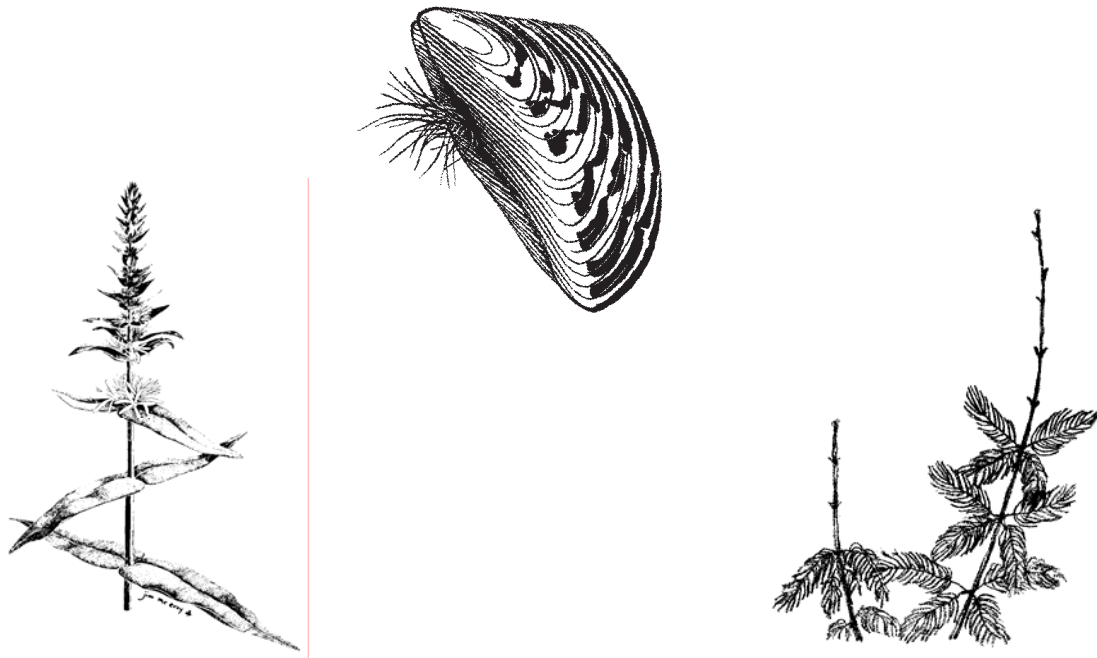


Standardized Reporting for the Aquatic Invasive Species Interstate Management Plans: The St. Croix National Scenic Riverway

Federal Fiscal Years 2005/2006
Calendar Year 2005



Submitted to the U.S. Fish and Wildlife Service on December 2, 2005 by:

National Park Service - St. Croix National Scenic Riverway

Minnesota Department of Natural Resources

Wisconsin Department of Natural Resources

Great Lakes Indian Fish and Wildlife Commission

Preface

Background

The St. Croix Aquatic Invasive Species Task Force (formally the St. Croix Zebra Mussel Prevention Task Force) was formed in 1992, to help formulate policies and direct actions that might stop or slow the spread of zebra mussels into the St. Croix National Scenic Riverway (Riverway). In 1998, an interstate management plan for aquatic nuisance species (as specified in the National Invasive Species Act of 1996) was developed by the St. Croix Aquatic Invasive Species Task Force (SCAISTF) and submitted to the national Aquatic Nuisances Species (ANS) Task Force by the Governors of Minnesota and Wisconsin, and the tribal chairpersons within the St. Croix River watershed. The ANS Task Force approved the plan and in the years since, Minnesota, Wisconsin, and Great Lakes Indian Fish and Wildlife Commission (GLIFWC) have received grants from the USFWS to implement the interstate plan. Each spring since 1993, the SCAISTF has created an annual action plan for zebra mussel prevention and mitigation.

Purpose of this Report

This document is intended to fulfill the annual reporting required by the U.S. Fish and Wildlife Service (USFWS) regarding the use of grant funds by the states of Wisconsin and Minnesota and the Great Lakes Indian Fish and Wildlife Commission to implement of the *St. Croix National Scenic Riverway Comprehensive Interstate Management Plan for the Prevention and Control of Nonindigenous Aquatic Nuisance Species* (Interstate Plan). The accomplishments of these entities during calendar year 2005 are included in this document.

The document is also intended to fulfill the reporting required by the USFWS regarding the actions taken by the National Park Service (NPS) – St. Croix National Scenic Riverway to protect endangered mussels in the river from zebra mussels. After the MNDNR legally declared a section of St. Croix River infested with zebra mussels in January 2001, the USFWS reviewed the pending *Cooperative Management Plan for the Lower Riverway*. USFWS determined that plan did not address the increased threat of a zebra mussel infestation on endangered species, and requested the NPS to augment its procedures. In addition to the actions taken, the NPS must account for these activities. This report provides written acknowledgment of the various measures.

Copies of this report and related plans may be obtained from the following sources:

National Park Service, St. Croix National Scenic Riverway, P.O. Box 708, St. Croix Falls, Wisconsin 54024; 715-483-3284 ext. 616; or email at byron_karns@nps.gov

Minnesota Department of Natural Resources, 500 Lafayette Road, St. Paul, MN 55155-4025; 651-259-5131; or e-mail at jay.rendall@dnr.state.mn.us

Wisconsin Department of Natural Resources, P.O. Box 7921, 101 Webster St., Madison, WI 53703; 608-266-9270; or e-mail at martir@dnr.state.wi.us

Great Lakes Indian Fish and Wildlife Commission, PO Box 9, Odanah, WI 54861; 715-682-6619 or e-mail at nkmiecik@glifwc.org @glifwc.org

1.0 Summary

Zebra mussels are currently the top AIS priority present in the St. Croix River. Other invasive species documented include purple loosestrife, Eurasian watermilfoil, rusty crayfish, and Chinese mystery snails. Asian carp (bighead, silver, grass, and black), and New Zealand mudsnail are emerging threats (see 3.1).

The 2005 St. Croix River Zebra Mussel Action Plan was adopted on February 25, 2005, with the actions occurring during the open water season. Foundations of the plan continue to be the following activities: information and education, boat inspections, access management, research, and monitoring. These methods were used during the 2005 boating season to limit the spread of zebra mussels and other aquatic invasive species in the Riverway.

This report includes summary field data for all components of the 2005 plan. Strategies identified in the Action Plan are noted with the major headings. Copies of the 2004 and 2005 Action Plan and this 2005 Annual Report may be obtained from the National Park Service, St. Croix National Scenic Riverway, P.O. Box 708, St. Croix Falls, Wisconsin 54024. Call 715-483-3284 ext. 616, or email <byron_karns@nps.gov>

2.0 Major Accomplishments

(1) Draft of State Management Plan by the Minnesota State Invasive Species Advisory Committee.

(3) Public awareness campaigns - kicked off with press coverage of initial monitoring dive in June (NPS, MNDNR, WIDNR, GLIFWC, USFWS).

(1,953) Public Service Announcements and paid radio spots were played on radio throughout the Lower St. Croix River Watershed and nearby infested waters areas.

(1) Purchased revised bait bucket bumper stickers warning anglers of the proper methods for bait disposal.

(7) Events in communities within the watershed included displays at the Outdoor Festival, Trego Lake Association Fair, the Pine County Fair, a presentation at the annual St. Croix research rendezvous, Musky Fest in Hayward, Pokegama Water Fair and St. Croix Soujourn.

(2) Events outside the watershed included a MNDNR display at the State Fair, which showcases zebra mussels, and an NPS display on AIS at the Fall Buckthorn Across Borders event in Bloomington.

(1531) Watercraft or trailers were inspected for AIS by the MNDNR. No zebra mussels were found on any watercraft entering the St. Croix during these inspections.

(1) The NPS maintained a floating check station to regulate upstream boaters and reduce the likelihood of infestations north of mile 28.5. This included a houseboat with signs, a floating banner, and six navigation buoys.

(3 **dive periods**) Monitoring actively for zebra mussels involves scuba dives during the open water season. One week of qualitative searches were performed during June. This dive focuses on preset or appropriate locations on the lower 30 miles of the river. In August, four days were spent performing quantitative sampling at eight locations from Stillwater to Prescott. Finally, locations including many sites within the flowage behind the dam in St. Croix Falls and the Interstate Parks location were examined in September

(49) PVC Hester-Dendy-type samplers were monitored for zebra mussels by USFWS and NPS. Associated glass slides were examined by the MNDNR.

(2024 **total boats checked; 434 found w/zms**) Dry-docked boats at 14 marinas throughout the Riverway were scrutinized in the fall of 2005, with numerous boats discovered with attached mussels.

(1) The Interstate/Interagency partnership, the St. Croix Aquatic Invasive Species Task Force was supported. The partnership includes: National Park Service, Minnesota Department of Natural Resources, Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, U. S. Army Corps of Engineers, the U. S. Fish and Wildlife Service, and Minnesota Sea Grant.

(17) Federal and/or state threatened and endangered unionid mussel species and their important populations were protected.

(1) BIA sponsored a conference, which was coordinated through GLIFWC, promoting cooperation and collaboration on regional AIS management efforts

(1) Mazina'igan, GLIFWC's quarterly newsletter, featured a special supplement on Aquatic Invasive Species.

(1) GLIFWC collaborated with Lac Courte Oreilles Natural Resources Department in hosting a HACCP workshop for area guides, bait dealers, and resort owners.

(1) Provided public access to AIS distribution data via an Internet Map Server (www.glifwc-maps.org). Also updated GLIFWC's invasive species website (www.glifwc.org/invasives).

(1) GLIFWC distributed AIS educational materials at several meetings, conferences, fairs, and tribal communities.

(1) GLIFWC conducted rapid assessment inventories for AIS on 30 inland lakes (8 within the St. Croix River watershed).

(1) GLIFWC inventoried AIS signage at 57 public boat landings (18 within the St. Croix River watershed).

(1) GLIFWC conducted boat landing area observations and recorded the presence/absence of AIS at 57 public boat landings.

3.0 Identify Strategies That Are Not Working And Why?

3.1 Federal/State Implementation Consistency Statement

The continued introduction of AIS into the Mississippi River basin, from the Great Lakes via the waterways in Illinois and from the aquaculture industry in southern states, poses a severe threat to the resources of the St. Croix River and its tributaries. The sources of these threats are beyond the ability of the state and tribes involved with the interstate plan to address.

Federal assistance is needed to develop and maintain barriers to prevent inter-basin and perhaps intra-basin movement of AIS. More involvement of federal agencies and more comprehensive national regulations are needed to limit intentional introduction and transport of AIS such as Asian carp (black, silver, bighead and grass carp) in the country. Improved national ballast water regulations are also necessary to prevent introduction of new AIS into the nearby Great Lakes and other coastal waters. Continued and increased funding for grants to implement state and interstate management plans is also important to maximize state, tribal, and other local efforts to attain state and interstate goals related to AIS.

4.0 Prevention Related Activities

(FWS Funds Used: MN \$66,551 budgeted and spent; WI \$20,000 budgeted, \$17,047 spent; GLIFWC \$2,419 spent)

4.1 Ballast Water Technologies

Not applicable.

4.2 Risk Assessments

(2) Pending funding this analysis may begin in 2006 by the U.S. Army Corps of Engineers, St. Paul District. Distribution and relative abundance data collected from field surveys conducted by GLIFWC and compiled from cooperating entities will be used together with information on ecological impacts and control options to prioritize future AIS management priorities and strategies.

4.3 Pathway Analyses (Interstate Plan – Strategy IA)

(2) May be scheduled for fiscal year 2006 (if funding is approved) by the U.S. Army Corps of Engineers, St. Paul District. Spatial and temporal distribution and relative abundance data collected and compiled in FY 2005 will be used by GLIFWC to examine regional patterns of AIS colonization and spread. This data will help to identify vectors, likely sites of introduction for new emerging AIS threats, and target audiences for I & E efforts.

4.4 Outreach/Education Activities for Prevention (Interstate Plan - Strategy ID)

Continue Public Awareness (Interstate Plan – Action ID1a)

The National Park Service, U. S. Fish and Wildlife Service, Minnesota and Wisconsin Departments of Natural Resources, Washington County Parks, Minnesota Sea Grant, the U. S. Army Corps of Engineers, the Great Lakes



Indian Fish and Wildlife Commission and others all informed the public about zebra mussels and associated problems to help prevent the spread of aquatic invasive species.

Visitor Centers and on Site Contacts: A variety of aquatic invasive species information is available to the public along the Riverway. This information includes exhibits of individual zebra mussels and zebra mussel clusters, invasive species brochures, identification cards and discussions with Park Rangers. The Minnesota and Wisconsin DNRs provide visitors with information, displays, or specific handouts about zebra mussels and invasive species at their contact stations or Interpretive Centers within parks along the river. Carpenter Nature Center has handout information on invasive species, including zebra mussels. Washington County's St. Croix Bluffs Regional Park provides informational handouts and a display on zebra mussels.

(654) Programs and (38857) Attendance - Visitors are contacted during naturalist talks conducted at local, county, and state parks and private campgrounds during the summer. NPS programs including aquatic invasive species information were presented to school groups, at several community outreach presentations, and various demonstrations. NPS Educational Partnership Team rangers included zebra mussel information in their Riverway orientation programs conducted onboard the Taylors Falls tour boat and The Osceola & St. Croix Valley Railway. Agency staff and other partners discussed zebra mussels and aquatic invasive species with the public during special programs, conferences, and community events.

(1531 at launches) On Site Contacts - Visiting boater are also informed about zebra mussels during on-site contacts by, DNR Conservation Officers, Water Craft Inspectors, NPS rangers and Big Dipper staff on the river and at various landings throughout the Riverway. Additionally, signs at every river boat launch warn boaters of the threats from aquatic invasive species.

(1,953) Mass media: radio and TV spots (1,580 paid spots and at least 373 public service announcements) - The majority of the St. Croix interstate grant funds provided to Minnesota are spent to increase boater awareness of AIS. The Minnesota DNR paid to air radio and television spots in three areas near the St. Croix River: the Duluth area, the twin cities, and along the Mississippi River down stream of the St. Croix River. These areas are a priority because they are the interstate areas that have populations of zebra mussels and numerous boaters who may visit the St. Croix River. Media purchases are focused at three time periods: the Minnesota fishing opener and Memorial Day weekend; the 4th of July holiday period; and late summer. These efforts are done annually and are thought to contribute to the high boater awareness in Minnesota.

(1888) Contacts with marinas and slip renters (Interstate Plan – Action ID1c)

The NPS provided all Riverway marina operators and their clients with information concerning zebra mussels. On-site contacts by NPS and USFWS during the spring and summer provided marinas with zebra mussel and AIS information, handouts and clusters or loose specimens.

(2) Provide informational materials (Interstate Plan – Action ID1d)

In addition, NPS, the DNRs, and MN Sea Grant yearly produce and/or distribute numerous aquatic invasive species printed information for general handout during the season. Federal agencies, Lake Associations, state parks, marinas, conservation districts, schools, etc., can receive these resources. Youth education resource kits (“traveling trunks”), called *Aquatic Exotics*, continue to be distributed and used by NPS and Sea Grant.

Table 1. Contact Information

| NPS Visitor Contacts | Mass Media | Marinas Contacted | Handouts Print |
|-----------------------------|--|--------------------------|--|
| Number of Programs | TV | 14 | NPS Site bulletin |
| 654 | Radio | Slips | “Don’t Dump Bait” Bumpersticker |
| Total Visitors | Billboards | 1888+ | <i>Mazina’igan</i> , GLIFWC’s quarterly newsletter, featured a special supplement on Aquatic Invasive Species. |
| 38857 | <i>St. Paul Pioneer Press</i> – May 1, July 29, 2005 | | <i>Help Stop Aquatic Hitchhikers</i> Brochure |

4.5 HACCP Plans/SOP/BMP

Current AIS distribution data were used to schedule various GLIFWC biological investigations to insure that infested waters were sampled last to minimize the risk of spreading AIS to noninfested waters. Staff also cleaned boats and equipment following specific protocols developed to minimize the spread of AIS.

Members of the Task Force Dive Team and MN DNR Biologist and Macalester College Researchers.

GLIFWC staff collaborated with the Lac Courte Oreilles College Extension program to host a HACCP workshop for guides, bait dealers, and resort owners in and around Sawyer County, Wisconsin.

4.6 Watercraft inspections and access management (Interstate plan - Strategy IB)

Watercraft inspections (Interstate Plan – Action IB1e)

(1531) watercraft or trailers were inspected for aquatic invasive species and no zebra mussels were found on any watercraft entering the St. Croix River during these inspections.

(354 hours) from May through August, MN DNR staff inspected boats and trailers and contacted visitors at landings and launches north of Prescott to Interstate Park (Table 2) within the St. Croix National Scenic Riverway.

These Watercraft Inspectors are stationed at St. Croix Bluffs Regional Park, Fourth Street City Launch in Bayport, the St. Croix Boomsite Public Access, William O'Brien State Park, Osceola Landing, Interstate Park, MN Lion's Club Park, and Wild River State Park. As boats are leaving these landings, they are checked for, and information is provided on, Eurasian watermilfoil, zebra mussels and other aquatic invasive species. The vast majority of time spent and contacts made occurred at the Boomsite and St. Croix Bluffs.

(18) GLIFWC staff collected field data from 57 public and private boat landings (18 within the St Croix watershed) in FY 2005 documenting the location and existing AIS signage at each landing. Additional landings were inventoried during fall fishery assessments, but data have not been summarized yet. GLIFWC will share this information with WDNR and use this data in combination with AIS distribution data to prioritize future sign placement so that infested waters are properly posted.

Table 2. MN DNR Inspections.

| | | Minnesota DNR Water Craft Inspections - 2004 Totals | | |
|----------------|------------|---|-------------------|-------------------|
| South to North | River Mile | ACCESS NAME | Total Inspections | Staff Time (Hrs.) |
| 1 | 4.2 | ST CROIX BLUFFS (AFTON) | 868 | 154.25 |
| 2 | 20.2 | BAYPORT 4TH ST. RAMP | 37 | 17.25 |
| 3 | 24.8 | BOOMSITE LAUNCH | 506 | 126.75 |
| 4 | 35.7 | WILLIAM O'BRIEN STATE PK | 94 | 44.25 |
| 5 | 44.4 | NPS OSCEOLA Day Use Area | 26 | 8.75 |
| 6 | 50 | MN INTERSTATE PARK | 0 | 3.25 |
| Totals | | Staff spent 354.5 hours on the St. Croix. | 1531 | 354.5 |

During 2005, WIDNR employed watercraft inspectors across the state to educate boaters how to perform watercraft inspections and to enlighten them on AIS issues. All watercraft inspectors including the St. Croix inspector logged their watercraft inspection data on a statewide database. The efforts at launches in Burnett and Polk Counties on the St. Croix included 4 hours, 3 boats and 9 boater contacts. If you would like to review this information see: <http://dnr.wi.gov/org/water/fhp/lakes/watercraftinspection/>

The 2005 WI DNR monitoring results should be posted relatively soon, but you can check on this website for future information: <http://www.dnr.wi.gov/invasives/>

4.7 Regulations, Permits, and Enforcement (Interstate Plan – Strategy IB)

Establish AIS Regulations (Interstate Plan – Action IB1)

- **Minnesota** - Zebra mussel, ruffe, round goby, Eurasian watermilfoil, and several other aquatic plants and animals are prohibited invasive species in Minnesota. These species may not be possessed, transported on public roads, or placed into a waterbody on a boat or trailer (M.S. 84D). No new regulations were established in 2005.

- **Wisconsin** – state law requires the removal of aquatic plants and zebra mussels each time a boat is launched in state waters. Conservation wardens or other law enforcement officers can prohibit recreational boaters or anglers from placing a boat in the water if aquatic plants or zebra mussels are attached to the boat or trailer. Boaters who violate the new law also face a \$50.00 fine for the first offense and up to \$100.00 for each subsequent offense within the same year.

Enforce State AIS Regulations (Interstate Plan – Action IB3)

- **Minnesota** - DNR conservation officers worked to enforce AIS laws along St. Croix and Mississippi River.
- **Wisconsin** – The first citation was issued under the regulation referenced above. Although it was issued outside the St. Croix watershed, its resolution may be a test for future enforcement on the Riverway.

Enforce NPS Rules (Interstate Plan – Action IB3)

Federal regulations adopted by the NPS prohibit introduction of zebra mussels into the noninfested portion of the St. Croix National Scenic Riverway. Unauthorized boaters traveling upstream of the Soo Line High Bridge (mile 28.5) north of Stillwater, are in violation of federal law and subject to civil and criminal penalties.

Access is restricted by the NPS in order to prevent the spread of zebra mussels. With very limited exceptions, boats are not allowed to cross upstream past a NPS vessel serving as an information station. The NPS boat, floating banner, and buoys positioned shore-to-shore, provided clear understanding of the prohibition against upstream travel.

4.8 100th Meridian Initiative

While no 100th Meridian Initiative activities were participated in during 2005, communication between Initiative and Task Force members continued frequent. The area covered by this interstate plan is east of the primary focus of the 100th meridian initiative.

5.0 Early Detection and Rapid Response

(FWS Funds Used: MN none budgeted; WI non budgeted; GLIFWC \$7,800 spent)

5.1 Number of Populations (plant or animal) for which there was a Rapid Response

(2) One lake (Gilmore Lake - in an adjacent watershed) in northern Wisconsin where zebra mussel veligers were detected by GLIFWC in initial samples, was sampled again later in the season to verify their presence. However, no veligers or adults were detected on the follow-up survey. This lake will be sampled again in 2006. Round Lake was also sampled again and no veligers were detected in 2005.

5.2 Number of Known Populations Inventoried/Monitored

(1) An ecological survey was conducted for known populations of zebra mussels in the Lower St. Croix River. This involved measuring densities of zebra mussels associated with known native mussel beds.

5.3 Outreach/Education Activities Supporting Rapid Response and Early Detection

ID cards and AIS brochures were distributed with contact information printed on each for reporting new infestations. This was done by GLIFWC, NPS, and the DNRs.

5.4 Surveys for Early Detection for New Populations (Interstate Plan – Action IC1c)

(0) There were no NPS/FWS/DNR surveys conducted for early detection for new populations of aquatic invasive species. Plans are underway to survey the Riverway for curly-leaf pondweed, Eurasian water milfoil, and rusty crayfish during 2006.

- GLIFWC conducted a rapid assessment of inland lakes to detect AIS in cooperation with WI DNR staff. The method is a systematic survey of the littoral zone using polarized sunglasses to detect the presence of AIS. An emphasis was placed on boat landings to detect early infestations near primary introduction points. In addition, plankton nets were used to collect samples for analysis by WI DNR for the presence of zebra mussel veligers and spiny water fleas. Thirty lakes (8 within the St. Croix River watershed) were chosen for inventory in FY 2005.

(2) Surveys were conducted with divers in noninfested areas (Interstate Park(s) and St. Croix Falls Flowage) of the St. Croix River to detect new infested areas.

6.0 Control and Management Activities

(FWS Funds Used: MN none budgeted; WI none budgeted; GLIFWC non budgeted)

6.1 Aquatic Invasive Species Managed/Controlled (Interstate Plan – Action IIAd)

- Currently, control efforts on the St. Croix River focus on stopping the spread to noninfested waters (within the Riverway and in both states) through education and access restrictions. These control strategies are used in coordination with the appropriate agencies and interested parties. Strategies will continue to be developed using the best available scientific information and be implemented according to agency mandates and sound environmental practices.

(1) There was one cooperative actions/management plan implemented: *St. Croix National Scenic Riverway Comprehensive Interstate Management Plan for Nonindigenous Aquatic Nuisance Species*

- There were no dispersal analyses conducted, but plans are in place for future study.

(2) Dispersal barrier/interconnected waterway efforts participated in. The States of Minnesota and Wisconsin provided funds for the construction of the Dispersal Barrier Demonstration Project, Chicago, IL. Minnesota DNR continued to pursue federal funds for the USACE to install Bio-acoustic Fish Fences in the Mississippi River or mouths of key tributaries such as the St. Croix River.

- No populations (animal or plant) managed and controlled **with FWS funds**
- No action items implemented related to control and management **with FWS funds**

(2) Also note the protection of two native mussel species that are being considered for possible federal candidate status and six species of special concern for a total of 23 mussel species listed by the federal and state governments.

6.4 Outreach/Education Activities

GLIFWC has developed a comprehensive website (www.glifwc.org/invasives) devoted to invasive species that provides information and resources for education outreach, control, and coordination of management efforts. This website was updated substantially in FY 2005. GLIFWC also distributes hundreds of brochures and ID cards annually to requesting agencies and individuals free of charge. Informational articles have also been published in the *Mazina'igan* - GLIFWC's quarterly newsletter. In addition, the spring 2005 edition of *Mazina'igan* featured a special supplement on Aquatic Invasive Species.

7.0 Species Baseline Information

(FWS Funds Used: MN \$5,000 budgeted and spent; WI \$5,000 budgeted and spent; GLIFWC \$1,000 spent)

7.1 Baseline Information

(8) Populations of zebra mussels on the lower river were monitored/inventoried for baseline density information.

Quantitative % change in abundance of invasive species is unknown, even for zebra mussels, but baseline data for the mollusk has now been established. Qualitative assessments suggest: zebra mussels have increased in the down rivers pools from Stillwater downstream; purple loosestrife has decreased on the lower river, maintained on the Namekagon and increased on the Upper St. Croix River; Eurasian watermilfoil and curly-leaf pondweed have increased in the lower river. Rusty crayfish may have extended their range, but become less dense in some locations.

Decrease % change in distribution of some invasive species - see separate reports

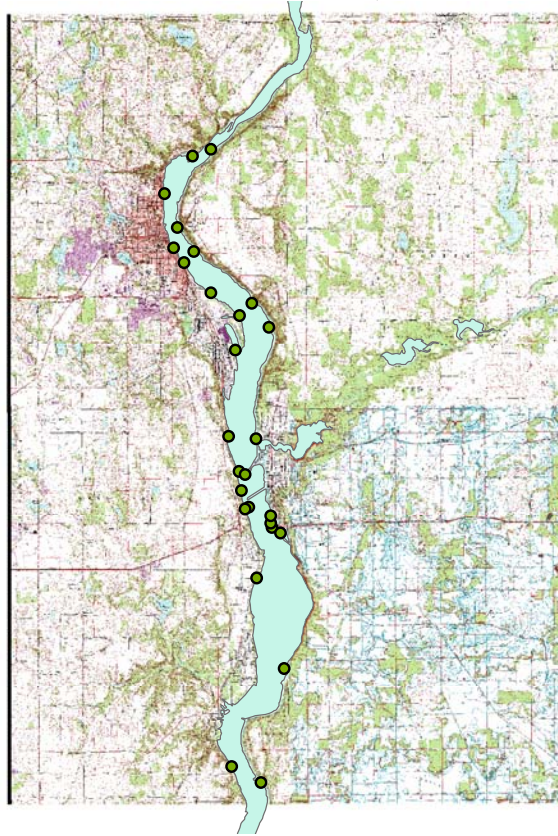
7.2a Active Monitoring (Interstate Plan – Action IC1b)

Background - The NPS - St. Croix National Scenic Riverway, established a Riverway SCUBA dive team in 2000, in large part to actively monitor for the presence of zebra mussels. Members of the team include staff from U.S. Fish and Wildlife Service (USFWS) field offices, Macalester College, Great Lakes Indian Fish and Wildlife Commission (GLIFWC) and Riverway staff. Dives were funded, managed and/or staffed by USFWS, NPS, GLIFWC, and WI and MN DNRs.

(3) Efforts in 2005 - Scheduled monitoring dives occurred three times: June, July/August, and September. The activities occurred between river mile 30 (Arcola Sandbar) and the mouth of St. Croix River at Prescott. Below is a brief summary of each dive

These are the highlights of the efforts by the Riverway dive team in our first (qualitative) assessment of zebra mussel populations in the river for 2005. Thirty locations (Fig. 1) were searched over 5 days from Stillwater (RM 25.4) to just south of Afton (RM 10.2). On Monday, 8 locations were searched from Mile Long Island (RM 25.4) to Sunnyside Marina (RM 22.2). 7 zebra mussels (zms) were found at two locations, both below the Stillwater Lift Bridge (RM 23.3). On day two, 47 zms were found at 5 of the 7 locations explored from the King Plant (RM 21.5) to just north of the Hudson Swing Bridge (RM 17.3). These locations include Andersen Bay (RM 20), where additional 100+ zms were found. One large object in the water contained what amounted to 35.66 zms per m². Wednesday, 9 locations were sampled—6 were found with zms. In the area between the Hudson Swing Bridge and the bottom of the Narrows (RM 17.3-16.5), 38 zms were collected. In this area, some time was spent assessing the catfish cages containing Winged-Mapleleaf infected fish. No zebra mussels were found on the cages themselves—most of which were installed May 4, 2005—though some had been in the river since last November. Along the riprap of the I-94 Bridge (RM 16), both upstream and downstream, zebra mussels were found in large quantities. All divers in these two areas discovered 100+ of mussels of various age classes, though very small (<5 mm) mussels were generally absent. This might suggest current year cohorts had yet to settle out or were too small to detect. Finally, on the last day in the lower river, 4 locations were examined—two on the each shore and one each above and below Catfish Bar (RM 15, 12.5, 10.5, 10.2). All locations contained zebra mussels. Of significance at Black Bass Bar (RM 10.2), was the discovery of multiple zms per item or native mussel.

Figure 1. Zebra Mussel Dive Locations in June. (Stillwater to Black Bass Bar)



In July, quantitative assessments of zebra mussel populations were performed at eight locations from Stillwater to Prescott. These include the two Critical Habitat Areas for the Higgin's Eye Pearly Mussel, located in Hudson and Prescott, Wisconsin. The remaining sampling locations are just downstream of the Stillwater Lift Bridge, Bayport, Lake St. Croix Beach, Black Bass Bar, the Kinnickinnic Narrows and St. Croix Bluffs Regional Park. The eight sites represent native mussel beds with a high likelihood of continued infestation by zebra mussels. By establishing a baseline data set, it will be possible to track zebra mussel population dynamics within the infestation zone. Besides using mussel beds as criteria for site selection, locations were spread throughout the four pools comprising Lake St. Croix (the last 23 miles).

The St. Croix SCUBA Dive Team, including staff from NPS, FWS, and GLIFWC, collected fixed amounts of substrate from within each location's set perimeter. Material is then processed and the information collected includes number of native live and dead mussels, live and dead zebra mussels, number of live zebra mussels on native mussels, number of Asian clams, and number and species of snails. The results of this survey for 2004 are available in a separate report that can be accessed at <http://www.nps.gov/sacn/management/Final2004ZMDensityonStCroix.pdf>. The 2005 results are pending.

In September, the Dive Team performed qualitative sampling in the flowage behind the St. Croix Falls Dam. Locations were also chosen below the tailwater in the Interstate

Park area. This location contains some of the most outstanding native mussel habitat on the river. During the dive week, eleven sites were searched in the flowage and seven in the Interstate Park area. Hundreds of native mussels and a wide range of suitable habitat areas were examined and explored. No zebra mussels were found during this event.

7.2b Passive Monitoring (Interstate plan – Action IC1a)

(22) The NPS had **22 PVC plate monitoring samplers** (one per site) in place from Mile Long Island (river mile 25.5) to the headwaters of the St. Croix and Namekagon rivers. These were checked every other week by NPS staff. Glass slides are affixed to these samplers, removed, preserved and replaced every two weeks. Slides provide initial substrate for zebra mussel settlement. Staff from the MN DNR examined the slides over the course of the season. There were no attached zebra mussels on any submitted slides.

(27) The USFWS, LaCrosse Fishery Resources Office, maintains 27 plate samplers at 9 locations from Stillwater to Prescott (Table 3). These samplers are checked every two weeks from ice out to ice up and several are allowed to remain in the water over-winter. Glass slides are also affixed and examined as above. No zebra mussels were found on samplers at Wolf Marine in Stillwater. Samplers found with attached zebra mussels were at Pt Douglas (Prescott), St Croix Bluffs Regional Park (MN side upstream from Prescott), Windmill and Afton Marinas (Afton, MN), St. Croix Marina gas dock (Hudson), Hudson Sailboat Mooring Dike, Bayport Marina, and Sunnyside Marina (Oak Park Heights). It was noted that considerably less veliger settling occurred on these samplers with YOY this year. Also, from Afton downstream, where numerous adults have been monitored on samplers, many of the large adults died-off this summer. Staff monitoring these samplers has suggested a correlation related to flooding and low, warm water conditions. Reproduction was only noted in the spring and again in early fall, but not in the summer. Again in 2005, there were no positive finds above the Stillwater Bridge.

Table 3. USFWS Samplers—2005 Finds by Location, Lower St. Croix NSR

| Location | Wolf Marine | Sunnyside | Bayport | Hudson Sailboat Mooring | Hudson Gas Dock | Afton | Windmill Marina | St. Croix Bluffs Regional Park | Pt. Douglas Marina |
|----------|-------------|-----------|---------|-------------------------|-----------------|--------|-----------------|--------------------------------|--------------------|
| Adults | 0 | 4 | 17 | 2 | 16 | 10-15+ | 10-15+ | 100+ | 100+ |
| YOY | 0 | 3 | 3 | 3 | 10 | - | - | - | - |
| Total | 0 | 7 | 20 | 5 | 26 | 35+ | 25+ | 50+ | 50+ |

7.2c Veliger Monitoring (Interstate plan – Action IC1c)

The U.S. Army Corps and the Wisconsin DNR collected cross-sectional composite water samples at Prescott and Hudson, during July, August and September of the 2001 through 2003 field seasons. The NPS has aided the WI DNR/USACE efforts since 2004 and worked with the Corps to take samples north of Stillwater. In 2004 and 2005, sampling in the St. Croix basin included Prescott, Hudson, just north of Stillwater, south of St. Croix Falls, and the Sunrise and Snake rivers. These samples were taken in July, August and early September.

The samples are processed and veligers counted at the U.S. Army Engineer Research and Development Center, Vicksburg, MS. The data table from the Corps results is included below. Data for 2005 will be available in early 2006.

Table 4. Veliger Abundance (#/L) [Table adapted from draft data provided by USACE]

| Locations and River Mile | July | | | | August | | | | September | | | |
|-----------------------------------|------|------|------|------|--------|------|------|------|-----------|------|------|------|
| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
| Miss. Lock & Dam 1—847.6 | NA | 0 | 0 | 0 | NT | 0 | 0 | 0 | NT | 0.1 | NT | 0 |
| Miss. Lock & Dam 2—815.3 | 1.7 | 0.2 | 0 | 0.22 | 2 | 0.2 | 0 | 0.02 | 0.1 | 0.3 | 0 | 0 |
| Miss. Lock & Dam 3—796.9 | 2.5 | 0.7 | 0.2 | 3.17 | 2 | 0.9 | 0.4 | 0.89 | 3.2 | 1.3 | 0.9 | 0.06 |
| Live Veligers | | | | | | | | | | | | |
| St. Croix R. (Hudson)—16.1 | 0.07 | 0 | 0 | 0.70 | 0.6 | 0 | 0 | 0.50 | 0.22 | 0 | 0 | 0.22 |
| St. Croix R. (Prescott)—0.1 | 0.01 | 4.53 | 0 | 5.94 | 2.39 | 0 | 0.62 | 5.69 | 2.03 | 0 | 0.64 | 9.03 |
| St. Croix R. (Stillwater)—25.4 | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| St. Croix R. (Interstate SP)—50.9 | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| Sunrise River (Kost Dam) | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| Snake River (Cross Lk Dam) | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| Dead Veligers | | | | | | | | | | | | |
| St. Croix R. (Hudson)—16.1 | 0.01 | 0 | 0 | 0.13 | 0.06 | 0 | 0 | 0.04 | 0.22 | 0 | NT | 0 |
| St. Croix R. (Prescott)—0.1 | 1 | 0.47 | 0 | 0.78 | 0.02 | 0 | 0.12 | 0.83 | 0.08 | 0 | 0.06 | 0.64 |
| St. Croix R. (Stillwater)—25.4 | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| St. Croix R. (Interstate SP)—50.9 | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| Sunrise River (Kost Dam) | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |
| Snake River (Cross Lk Dam) | NT | NT | NT | 0 | NT | NT | NT | 0 | NT | NT | NT | 0 |

*-2001 sample taken at Kinnickinnic Narrows site. NT = Not Taken

7.2d Other zebra mussel detections

During three days at the end of October, NPS employees conducted an examination of St. Croix boats dry docked for the season and stored at marinas from St. Croix Falls to Hastings (Table 5). Of the **2024** boats checked, **434** were found with attached zebra mussels on their sterns (outdrives, trim tabs, gauges, etc). Most of the finds were at marinas from Bayport south, but every marina within the infestation zone (Stillwater @ RM 25.4 south) had at least one boat with attached zebra mussels.

Table 5. 2005 Dry Docked Boats.

| St. Croix Dry Docked Boats – 2004 | | | | | | |
|-----------------------------------|------------|-----------------|-----------------------|---------------------|-------------|------------|
| N/S Order | River Mile | Date | Marina | City | T Boats | ZM Boats |
| 1 | 54 | 11/22 | Wild River Marina | St. Croix Falls | 50 | 0 |
| 2 | 34.5 | 11/22 | Marine Landing | Marine-on-St. Croix | 50 | 0 |
| 3 | 24.5 | 10/25 | Wolf Marine | Stillwater | 166 | 8 |
| 4 | 23.5 | 10/25 | Stillwater Yacht Club | Stillwater | 122 | 5 |
| 5 | 22.2 | 10/25 | Sunnyside Marina | Oak Park Hts. | 195 | 16 |
| 6 | 19.9 | 10/25 | Beach House Marina | Bayport | 79 | 2 |
| 7 | 19.7 | 10/25 | River Park Marina | Bayport | 113 | 15 |
| 8 | 19 | 10/25 | Bayport Marina | Bayport | 201 | 47 |
| 9 | 16.3 | 10/26 | St. Croix Marina | Hudson | 215 | 71 |
| 10 | 11.6 | 10/26 | Afton Boat Storage | Afton | 180 | 86 |
| 11 | 11.5 | 10/26 | Afton Marina | Afton | 237 | 83 |
| 12 | 11.4 | 10/26 | Windmill Marina | Afton | 98 | 16 |
| 13 | 811 | 10/26 | Miss/Croix | Prescott | 120 | 82 |
| 14 | 814.4 | 10/27 | King's Cove | Hastings | 198 | 3 |
| Totals | | 2.5 days | 14 | | 2024 | 434 |

7.3 Information Transfers

(2) Number of activities for states/tribes/partners for which technical assistance was provided: During the fall of 2005, meetings and workshops were held to address issues related to purple loosestrife, Eurasian watermilfoil, and other aquatic invasives. In early October, WI Sea Grant held a training/introduction session, followed by a WI DNR meeting to discuss AIS outreach materials and purple loosestrife activities, respectfully. The following week, The Bureau of Indian Affairs and Great Lakes Indian Fish and Wildlife Commission held a workshop to address needs related to AIS issues in northern Wisconsin, Michigan and Minnesota. At the end of the month, the MN DNR and MN Sea Grant hosted a multi-agency workshop to gather input to finalize the Minnesota State Invasive Species Plan. Finally, the annual meeting (November 9-10) of senior federal agency leaders from the Midwest, focused on invasive species. Member of the Task Force hosted, spoke, provided expert advice, or attended all of these meetings.

Additionally, GLIFWC has compiled a regional database of AIS occurrences and provides public access to this information via an Internet Map Server (www.glifwc-maps.org). GLIFWC also shares data routinely with cooperating agencies

8.0 Forging Effective Partnership

(FWS Funds Used: MN none budgeted; WI none budgeted; GLIFWC \$none budgeted)

8.1 Public Awareness Campaigns

(3) Number of public awareness campaigns conducted by: MNDNR, WDNR, GLIFWC.

8.2 Other Cooperative Efforts

One regional panel supported: The efforts under the St. Croix interstate plan fall within the geographic area of the new Mississippi River Basin Panel on aquatic invasive species. The panel was established in 2003. Wisconsin and Minnesota participated in the new panel in 2004 and 2005.

GLIFWC hosted a conference promoting cooperation and collaboration on regional AIS management efforts. Over 80 participants from various federal, state, tribal, and county governments participated as well as leaders of many grass roots non-government organizations. The conference helped to raise awareness of ongoing efforts, available resources and expertise, and identified many new opportunities for collaborative efforts on regional AIS issues.

One Interstate partnership, the St. Croix Aquatic Invasive Species Task Force, was supported. The partnership includes: National Park Service—St. Croix National Scenic Riverway, Minnesota Department of Natural Resources, Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission, Army Corps and the USFWS.

No Cooperative or Grant-funded projects were begun in 2005 with FWS funding.

9.0 Other Activities Not Listed Above

(FWS Funds Used: none)

| | |
|--|--------------------|
| Total FWS Funds Used for All Activities | (\$104,807) |
|--|--------------------|

| | |
|---|--------------------|
| Total State and Tribal Funds Used for All Activities | (\$266,719) |
|---|--------------------|

| | |
|--|--------------------|
| Total Funds used for All Activities | (\$371,526) |
|--|--------------------|

Cost of all Accomplishments*, Activities and/or Projects.
Agreement Number: 14-48-0003-98-1105 Minnesota

Total Federal Funding (per grantee) since Plan Inception = \$420,500 Minnesota (FYs 98-04)

Maximum Federal Shares (grant agreement amount) FY 2004 Grant Year (use in Calendar 2005) = \$71,551 Minnesota

| Invoice Amount and Date (mm/dd/yy) | Activity/Project/ Accomplishment ^{*1} | Federal FY (Grant Year) ^{*2} | Budget Line ^{*3} | Total requested payment by budget line (\$) | Matching funds ^{*4} (\$) | FWS ANS funds received (reimbursed) from FY04 grant (\$) | Total Cost (Federal and State) in Federal FY (\$) |
|------------------------------------|---|---------------------------------------|---------------------------|---|-----------------------------------|--|---|
| na | • Watercraft Insp. • Coordination • Enforcement | | Salaries | 0 0 0 | 66,018 2,245 5,000 | | |
| na | | | Benefits | 0 | | | |
| | | | Travel | 0 | | | |
| | | | Transportation | 0 | | | |
| | • Radio and TV media purchases | 04 | Communication | 66,551 | 10,000 | | |
| | • Stickers | | Printing | 0 | 1,000 | | |
| | • Zebra mussel monitoring | 04 | Other services | 5,000 | 153 | | |
| | | | Supplies | 0 | | | |
| | | | Equipment | | | | |
| | Total | | | 71,551 | 84,416 | 0 | 155,967 |

* Preferred.

^{*1} If expenditures were not tracked by either Project or Activity, then track expenditures for all activities combined by Federal FY.

^{*2} October 1 through September 30. Example - FY2002 ends September 30, 2002.

^{*3} Salaries, benefits, travel, transportation (e.g., mail, freight), communications (e.g., telephone), printing, other services (e.g., contracts), supplies, equipment.

^{*4} Includes in-kind match.

Cost of all Accomplishments*, Activities and/or Projects.

Agreement Number: 30181-4-G050 Wisconsin

Total Federal Funding (per grantee) since Plan Inception = \$172,001 Wisconsin (FYs 98-04)

Maximum Federal Shares (grant agreement amount) FY 2004 Grant Year (use in Calendar 2005) = \$25,000 Wisconsin

| Invoice Amount and Date (mm/dd/yy) | Activity/Project/Accomplishment ^{*1} | Federal FY (Grant Year) | Budget Line | Total requested payment by budget line (\$) | Matching funds ^{*2} (\$) | FWS ANS funds received (reimbursed) from FY04 grant (\$) ^{*1} | Total Cost (Federal and State) in Federal FY (\$) |
|------------------------------------|---|-------------------------|-----------------------|---|-----------------------------------|--|---|
| na | Zebra mussel monitoring dives | 04 | Contract | \$5,000 | \$2,671 \$4,679 | | |
| | Watercraft inspection | 04 | Salary & benefits | \$8,013 | | | |
| | Information/education and outreach efforts | 04 | Educational materials | \$3,768 | | | |
| | | | Transportation | 0 | | | |
| | | | Communication | 0 | | | |
| | | | Printing | 0 | | | |
| | | 04 | Other services | \$193 | | | |
| | | 04 | Supplies | \$5,073 | | | |
| | | | Equipment | | | | |
| Billed quarterly | Total | | | \$22,047 | \$7,350 | na | \$29,397 |

* Preferred.

^{*1} Expenditures were not tracked by either Project or Activity; the expenditures for all activities are combined for Federal FY.

^{*2} Includes in-kind match.

Cost of all Accomplishments*, Activities and/or Projects.
Agreement Number: 30181-9-G039 GLIFWC

Total Federal Funding (per grantee) since Plan Inception = \$??,??? GLIFWC (FY98 – FY05)

Maximum Federal Shares (grant agreement amount) FY 2005 = \$5,000 GLIFWC

| Invoice Amount and Date (mm/dd/yy) | Activity/Project/Accomplishment ^{*1} | Federal FY (Grant Year) ^{*2} | Budget Line ^{*3} | Total requested payment by budget line (\$) | Matching funds ^{*4} (\$) | FWS ANS funds received (reimbursed) from FY04&05 grant (\$) | Total Cost (Federal and Tribal) in Federal FY (\$) |
|------------------------------------|---|---------------------------------------|---------------------------|---|-----------------------------------|---|--|
| | | 05 | Salaries | 3,375 | 80,778 | | |
| | | 05 | Benefits | 725 | 26,083 | | |
| | | 05 | Travel | 3,481 | 10,601 | | |
| | | 05 | Transportation | 228 | 4,440 | | |
| | | 05 | Communication | 0 | 2,636 | | |
| | | 05 | Printing | 0 | 12,743 | | |
| | | 05 | Other services | 0 | 11,200 | | |
| | | 05 | Supplies | 271 | 12,472 | | |
| | | 05 | Equipment | 2,419 | 7,500 | | |
| | Total | | | 11,209 | 174,953 | 5,000 (FY04) | 186,162 |

* Preferred.

^{*1} If expenditures were not tracked by either Project or Activity, then track expenditures for all activities combined by Federal FY.

^{*2} October 1 through September 30. Example- FY2002 ends September 30, 2002.

^{*3} Salaries, benefits, travel, transportation (e.g., mail, freight), communications (e.g., telephone), printing, other services (e.g., contracts), supplies, equipment.

^{*4} Includes in-kind match.

10.0 References

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- Heath, D. 2004. Results of 2004 monitoring of freshwater mussel communities of the Saint Croix National Scenic Riverway, Minnesota and Wisconsin. Final report (unpub.) by the Wisconsin DNR to the U.S. Army Corps of Engineers, St. Paul District. 25pp.
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11.0 Appendix

Table 1. Program Information—All years.

| Zebra Mussel Prevention Plan Annual Summary Statistics | | | | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Program Year | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002* | 2003** | 2004 | 2005 |
| Visitor Contacts | 52,274 | 56,127 | 60,356 | 62,661 | 66,417 | 72,210 | 66,119 | 35,755 | 39,017 | 46,574 | 42,162 | 38,857 |
| Big Dipper Contacts | 10,634 | 6,158 | 5,826 | 6,094 | 6,415 | 5,534 | 3,784 | 11,237 | 11,100 | 9,895 | 7,648 | ++ |
| Special Use Permits Issued | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 39 | 25 | 43 | 45 | 43 |
| Inspection Dives | 0 | 1 | 2 | 2 | 1 | 4 | 2 | 3 | 0 | 0 | 1 | 0 |
| Monitoring Dives | 6 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Monitoring Samplers | 37 | 34 | 33 | 57 | 53 | 43 | 61 | 64 | 70 | 69 | ~66 | 49 |
| Winter dry-docked boats inspected | 100 | 100 | 544 | 804 | 1,463 | 1,924 | 1,919 | 1,833 | 1,921 | 2,192 | 1,869 | 2,024 |

*One/**Two visitor centers were closed. ++Physical boundaries only

Figure 1. Dry Docked Boats—All years.

Fall Boat Check and ZM Finds



Table 2. Dry Docked Boats—All years.

| River Mile | Marina | City | 1994 | 94 ZM | 1995 | 95 ZM | 1996 | 96 ZM | 1997 | 97 ZM | 1998 | 98 ZM | 1999 | 99 ZM | 2000 | 00 ZM | 2001 | 01 ZM | 2002 | 02 ZM | 2003 | 03 ZM | 2004 | 04 ZM | 2005 | 05 ZM | Slips |
|------------|-----------------------|--------------------|------------|----------|------------|-----------|------------|-----------|------------|-----------|-------------|-----------|-------------|-----------|-------------|------------|-------------|-----------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|--------------|
| 54 | Wild River Marina | St. Croix Falls | | | | | 0 | | 23 | 0 | | | 43 | 0 | 47 | 0 | 51 | 0 | 20 | 0 | 73 | 0 | 49 | 0 | 50 | 0 | ? |
| 34.5 | Marine Landing | Marine-on-St.Croix | | | | | 0 | | | | | | 28 | 0 | 45 | 0 | 42 | 0 | 51 | 0 | 51 | 0 | 53 | 0 | 50 | 0 | 32 |
| 24.5 | Wolf Marine | Stillwater | | 1 | | 0 | 0 | 0 | 99 | 0 | 188 | 5 | 232 | 3 | 191 | 1 | 185 | 5 | 195 | 3 | 184 | 4 | 172 | 6 | 166 | 8 | 250 |
| 23.5 | Stillwater Yacht Club | Stillwater | | 0 | | 0 | 63 | 1 | 65 | 0 | 161 | 4 | 175 | 0 | 135 | 0 | 163 | 1 | 128 | 2 | 126 | 6 | 108 | 3 | 122 | 5 | 157 |
| 22.2 | Sunnyside Marina | Oak Park Heights | | 0 | | 1 | 100 | 4 | 133 | 5 | 253 | 9 | 249 | 5 | 254 | 8 | 251 | 3 | 251 | 5 | 294 | 4 | 172 | 16 | 195 | 16 | 200+ |
| 19.9 | Beach House Marina | Bayport | | 0 | | 0 | 54 | 0 | 45 | 0 | 156 | 0 | 92 | 0 | 89 | 0 | 80 | 0 | 84 | 0 | 86 | 1 | 67 | 1 | 79 | 2 | 180 on Land |
| 19.7 | River Park Marina | Bayport | | 0 | | 0 | | 2 | | 2 | | 2 | 91 | 2 | 110 | 6 | 115 | 3 | 103 | 8 | 99 | 8 | 103 | 19 | 113 | 15 | 70+ |
| 19 | Bayport Marina | Bayport | | 1 | | 6 | 118 | 2 | 173 | 7 | 145 | 10 | 213 | 7 | 208 | 10 | 119 | 8 | 214 | 7 | 219 | 10 | 192 | 43 | 201 | 47 | 225 |
| 16.3 | St. Croix Marina | Hudson | | 3 | | 15 | 215 | 8 | 236 | 12 | 239 | 9 | 284 | 6 | 267 | 17 | 231 | 8 | 236 | 18 | 233 | 13 | 198 | 63 | 215 | 71 | 300+? |
| 11.6 | Afton Boat Storage | Afton | | | | | 0 | | 0 | | 0 | | 96 | 1 | 103 | 3 | 125 | 3 | 131 | 15 | 108 | 6 | 94 | 8 | 98 | 16 | 0 |
| 11.5 | Afton Marina | Afton | | 0 | | 4 | | 4 | 30 | 0 | 170 | 5 | 182 | 4 | 184 | 32 | 184 | 33 | 181 | 57 | 148 | 26 | 187 | 100 | 180 | 86 | 184 |
| 11.4 | Windmill Marina | Afton | | 1 | | 0 | | 1 | | 0 | 151 | 9 | 239 | 3 | 283 | 39 | 207 | 16 | 206 | 48 | 264 | 40 | 220 | 92 | 237 | 83 | 180 |
| 811 | Miss/Croix | Prescott | | | | | | | | | | | | | | | | | 121 | 59 | 116 | 61 | 104 | 92 | 120 | 82 | ? |
| 814.4 | King's Cove | Hastings | | | | | | | | | | | | | | | | | | | 191 | 10 | 150 | 24 | 198 | 3 | ? |
| | Total | 13 | 100 | 6 | 100 | 26 | 574 | 25 | 804 | 26 | 1463 | 53 | 1924 | 30 | 1919 | 116 | 1833 | 80 | 1921 | 222 | 2192 | 189 | 1869 | 467 | 2024 | 434 | 1888+ |

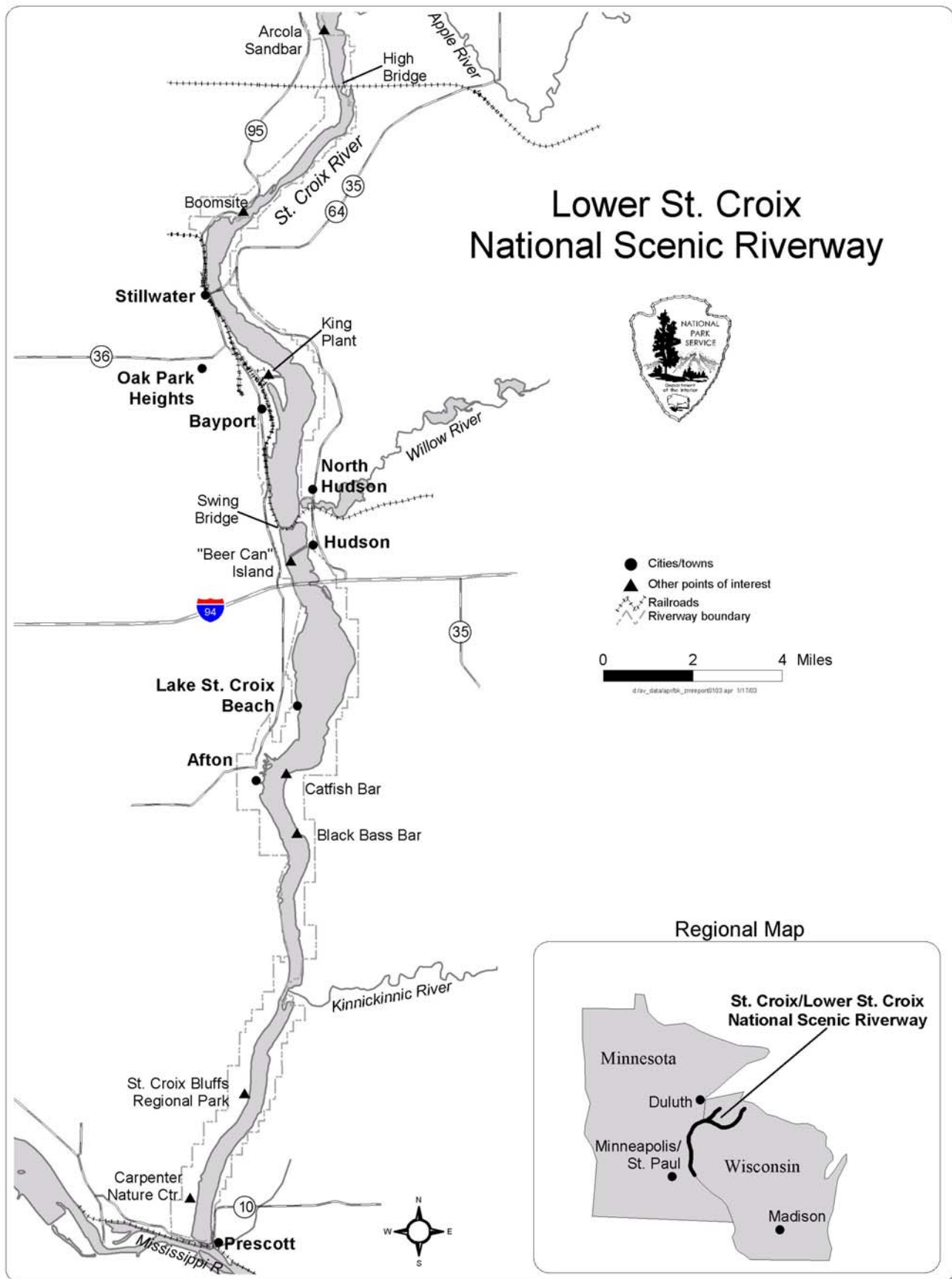


Figure 2. Map of the Lower St. Croix National Scenic Riverway.